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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,093	02/19/2002	Subhash Gupta	CS99-063B	2767

28112 7590 03/28/2003

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EXAMINER

ERDEM, FAZLI

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 03/28/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/077,093

Applicant(s)

GUPTA ET AL.

Examiner

Fazli Erdem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 17-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. (6,235,600) in view of Ding et al. (6,153,472).

Regarding Claims 17-21, Chiang et al. show a method for improving hot carrier lifetime via a nitrogen implantation procedure preformed before or after a TEOS liner deposition where a process for fabricating input/output, N channel devices, featuring an ion implanted nitrogen region used to reduce hot carrier electron injection is shown. The process features implanting a nitrogen region, at the interface of an overlying silicon dioxide layer, and an underlying lightly doped region. The implantation procedure can either be performed prior to or after the deposition of a silicon oxide liner layer, in both cases resulting in a desire nitrogen pile-up at the oxide-lightly doped interface, as well as resulting in a more graded lightly doped source/drain profile. Furthermore, Figs. 1-7 show insulator, polysilicon layer, oxide liner, L-Shaped nitride spacer in a required manner. Chiang et al. fail to disclose the oxide liner and the sidewall spacers in the required manner. However, Ding et al. disclose a method for fabricating a flash memory where the oxide liner and the sidewall spacers are disclosed in the required manner.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the liner oxide and the sidewall spacers in the required manner

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in Chiang et al. as taught by Ding et al. in order to have a semiconductor device with better performance.

2. Claims 22-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. (6,235,600) in view of Ding et al. (6,153,472) further in view of Chen et al. (6,323,105).

Regarding Claims 22-25, Chiang et al. and Ding et al. fail to disclose the polysilicon structure in the required manner. However, Chen et al. disclose a method for fabricating an isolation structure including a shallow trench isolation structure and a local-oxidation isolation structure where the required polysilicon structure is disclosed.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the polysilicon structure in required manner in Chiang et al. and Ding et al. combination as taught by Chen et al. in order to have a semiconductor device with better performance.

3. Claims 26-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. (6,235,600) in view of Ding et al. (6,153,472) further in view of Tsai (6,251,748).

Regarding Claims 26-28, Chiang et al. and Ding et al. fail to disclose the polysilicon structure in the required manner. However, Tsai discloses a method of manufacturing shallow trench isolation structure where the required polysilicon structure is disclosed.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the polysilicon structure in required manner in Chiang et al. and Ding et al. combination as taught by Tsai in order to have a semiconductor device with better performance.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fazli Erdem whose telephone number is (703) 305-3868. The examiner can normally be reached on M - F 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

FE
March 24, 2003



NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800